Private Physicians in Ambulatory Care Training In U.S. Medical Schools

John C. Meadows, Jr., M.D., Richard L. Bauer, M.D., and Andrew K. Diehl, M.D.

Abstract—The contribution of private physicians to medical student education in ambulatory care was determined by a questionnaire directed to departments of family practice, internal medicine, and pediatrics in 124 U.S. medical schools and their branch campuses. The response rate was 84 percent. Of the responding departments, 82 percent offered an ambulatory care course in curricular years three and/or four, and 56 percent utilized private physicians in their courses. Departments of internal medicine were least likely to offer such a course, and their courses less frequently included teaching by private physicians ($p < 0.0001$). When offered, internal medicine courses in ambulatory care were least likely to be required for graduation and involved the fewest students. Departments of family practice were most likely to offer ambulatory care courses and were most likely to utilize private physicians in their courses.

Although community-based private physicians frequently teach in U.S. medical schools, their contribution to medical education has not been fully described. A variety of ambulatory care courses using such physicians has been reported (1–7). The reasons for recruiting private physicians to teach ambulatory care and the degree of their involvement vary considerably, as do the format, duration, and timing of ambulatory care courses. Some institutions have reported using private physicians because of the need for more teaching space and additional faculty members (3, 7) and for exposing students to a wider variety of patients (1–7). In others, courses include private physicians as teachers to encourage students to choose a certain specialty or practice site (3, 8).

At the University of Texas Medical School at San Antonio, community-based physicians are used extensively as teachers in a six-week ambulatory medicine course required of fourth-year medical students. The departments of medicine, pediatrics, and family practice offer students full- or part-time experiences with community-based physicians during the course. To compare the course with similar courses at other institutions, the authors surveyed the primary care departments of all medical schools in the United States. The purpose was to define the extent to which private practitioners taught ambulatory care and to ascertain the goals of the courses in which they taught.

Dr. Meadows is clinical professor of medicine, Dr. Bauer is assistant professor of medicine, and Dr. Diehl is associate professor of medicine and chief of the Division of General Medicine, all in the Department of Medicine, University of Texas Medical School at San Antonio, Texas.

Methods

From May through August 1984 a questionnaire was mailed to all family practice (or equivalent), internal medicine, and pediatrics departments in the 124 U.S. medical schools listed as institutional members in the *AAMC Directory of American Medical Education, 1983–1984* (9). Branch campuses of the medical schools of the universities of Illinois, Kansas, Oklahoma, and West Virginia also were mailed questionnaires and treated as separate institutions in the analysis. Department chairmen or their representatives were questioned regarding courses for medical students in ambulatory care and the participation of private physicians in these courses. Requested information included the format and goals of the course, the reasons for using private physicians, financial compensation offered to students and faculty members, and an assessment of the course's educational value. In November 1984 one follow-up letter was sent to each department that had not responded to the initial mailing.

Several departments reported having more than one ambulatory care course. In such cases, data from all such courses offered by the department were used to compute the average duration, percentage of time spent in various course components, and student financial support for the department's ambulatory care program. This average was weighted according to the proportion of the students in the school's 1983–84 class who were in each individual course. The sizes of the 1984 graduating classes of the responding schools were obtained from published reports (10).

Questionnaires were mailed to the departments at the 124 medical schools and their branch campuses. Four schools, in addition to the main campus, had a total of six branch campuses making a total of 130 institutions. All the institutions had departments of internal medicine and pediatrics. Twenty-five institutions listed no department of family practice in the *AAMC Directory of American Medical Education, 1983–84* (9), but four chairmen of family practice and five chairmen of community medicine departments responded to letters addressed to departments of family practice in these schools. The remaining 16 institutions were assumed to have no departments of family practice. One two-year school was excluded from analysis. Responses from the remaining departments (129 internal medicine, 129 pediatrics, and 113 family practice departments) formed the basis of the analysis, in which the authors examined only those courses offered during the third and fourth academic years. (Thirteen departments also offered ambulatory care courses in the first or second year of medical school.)

Statistical tests to compare ambulatory care courses in various departments were performed using the Statistical Package for the Social Sciences (11). Two-tailed tests of significance were used in all analyses. Student's *t*-tests were used to test differences in continuous variables such as course duration, and chi-square tests were used for tabular data such as interdepartmental differences in course assessments.

Results

Responses were received from 312 of the 371 departments polled, for a response rate of 84.1 percent. The rate was comparable among departments of family practice (80 percent), internal medicine (85 percent), and pediatrics (87 percent). Departments in private schools re-

sponded nearly as often (80 percent of 130) as did those in public schools (86 percent of 241).

Overall, 255 (82 percent) of the responding departments offered an ambulatory care course in curricular years three and/or four, and 175 (56 percent) of all of the responding departments included private physicians in such courses. Internal medicine departments offered ambulatory care courses less frequently (64 percent) than did family practice (89 percent) or pediatrics departments (94 percent) ($p < .001$) (Figure 1). Furthermore, internal medicine courses in ambulatory care were far less likely to include teaching by private physicians (internal medicine, 26 percent; family practice, 80 percent; pediatrics, 66 percent) ($p < .001$). Internal medicine courses in ambulatory care that included private physicians were less likely to be required for graduation (internal medicine, 48 percent; family practice, 74 percent; pediatrics, 66 percent; $p = .03$) and involved fewer students (mean = 52 students for internal medicine versus 88 and 84 students for family practice and pediatrics, respectively; $p = .03$). Of the 312 responding departments, 49 offered one or more full-time preceptorship courses, which were defined as courses with 90 percent or more of the course time spent under the direction of private physicians. Internal medicine and pediatrics departments were less likely to offer full-time preceptorships (family practice, 33 percent of 90 departments; pediatrics, 8 percent of 112; internal medicine, 9 percent of 110; $p < .001$).

Because the definition of private physician may vary among schools, the departments were asked to identify any use of private physicians in their ambulatory care courses. The responses indicated that most private physicians described in this study were volunteers with active practices based outside the university. Specifically, 91 percent of the programs utilized private physicians whose offices were located in the community. The remaining

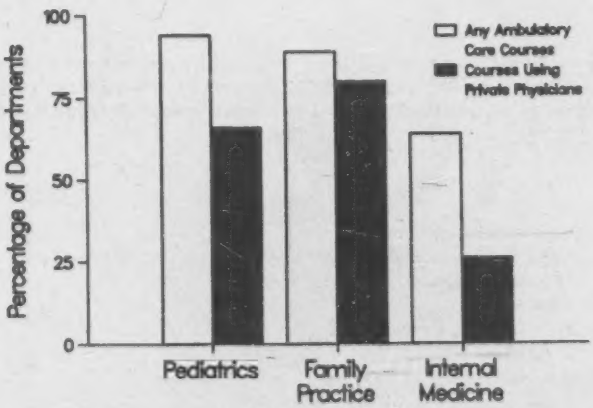

FIGURE 1

Percentages of 90 family practice, 112 pediatrics, and 110 internal medicine departments that offered a course in ambulatory care and percentages that used private physicians in such courses in U.S. medical schools, 1983–84.

departments, most of which were located in private institutions, stated that their private physicians had offices and taught in university facilities. To differentiate these two groups, the first is described in Table 1 as community-based private physicians, and the second is termed university-based private physicians. Only 21.4 percent of the departments offered any remuneration to the private physician for teaching services. The mean annual stipend of $81 to these physicians also supported the conclusion that most of their services were voluntary.

The proportion of students who were exposed to private practice was determined by comparing the number of students taking ambulatory care courses involving private practitioners in the responding departments during 1983–84 with the total number of students graduating from the schools of the responding departments in 1984. Departments of internal medicine provided exposure to private practice to a smaller percentage of students than did the departments of family practice and pediatrics (Figure 2).

The departments were polled regarding the format of their courses that involved private physicians. The mean duration for these courses was 5.0 weeks, which did not differ significantly among the three disciplines. The proportion of time spent by the students in various activities was similar for the departments of family practice and internal medicine (Table 1). Family practice students spent more time with community physicians and less time in hospital clinics than did internal medicine students. Students in pediatrics courses spent far less time with community-based physicians and far more time in university outpatient clinics than did students in the other departments. In addition, courses offered by pediatrics departments often included an inpatient component. The remainder of course time was spent in a variety of activities, including nonuniversity hospital clinics, seminars, lectures, and independent study.

The rationale for involving private physicians in teaching ambulatory care was also surveyed. The responding course di-

TABLE 1

Mean Percentages of Course Time Spent in Different Components of Ambulatory Care Courses Involving Private Physicians Conducted by 61 Departments of Family Practice, 25 Departments of Internal Medicine, and 68 Departments of Pediatrics, U.S. Medical Schools, 1983–1984

Course Component	Departments		
	Family Practice	Internal Medicine	Pediatrics
Under direction of private physicians			
Community-based physicians*	62.0	56.5	29.7
University-based physicians†	18.9	15.4	10.5
In hospital clinics			
University	7.2	19.8	42.1
Nonuniversity	2.0	2.7	3.0
In independent study	1.3	2.7	2.2
Other	8.6	2.9	12.5
Total	100.0	100.0	100.0

* Community-based physicians are physicians who have their offices and teach outside the university.

† University-based physicians are physicians who have their offices and teach in university facilities.

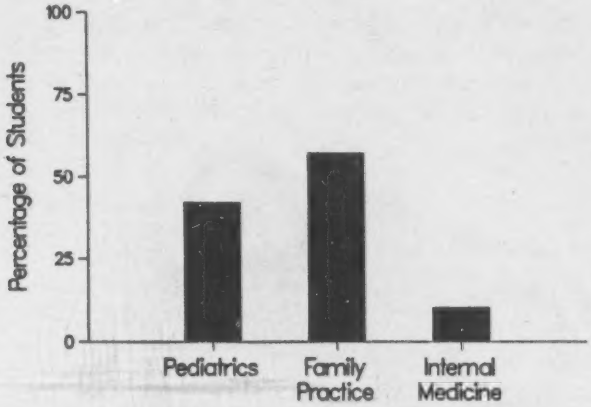

FIGURE 2

Percentages of students graduating in 1984 at the U.S. medical schools of the responding departments of family practice (90), pediatrics (112), and internal medicine (110) who were exposed to private practice in ambulatory care programs conducted by the departments during 1983–84 (total graduating students were 11,201 at the schools of the family practice departments, 14,493 at the schools of the pediatrics departments, and 14,140 at the schools of the internal medicine departments).

TABLE 2

Numbers and Percentages of 61 Family Practice, 25 Internal Medicine, and 68 Pediatrics Departments in U.S. Medical Schools Identifying Reasons for Using Private Physicians in Their Ambulatory Care Courses, 1983–84

Course Objectives	Family Practice Departments		Medicine Departments		Pediatrics Departments	
	No.	Percentage	No.	Percentage	No.	Percentage
Teach attitudes in patient care	30	49	13	52	38	56
Improve students' clinical skills	26	43	9	36	21	31
Furnish cognitive knowledge to students	5	8	2	8	6	9
Demonstrate other career choices	13	21	6	24	14	21
Encourage private practice as a career	10	16	1	4	1	1

rectors most frequently cited "to teach attitudes in patient care" and "to improve clinical skills" as reasons for using private physicians as instructors (Table 2). Although all three specialties were equally interested in "demonstrating other career choices," only the departments of family practice seemed inclined to "encourage private practice as a career."

Financial support to students enrolled in ambulatory care courses using private physicians was most commonly provided by departments of family practice (32 percent versus 8 percent for internal medicine and 6 percent for pediatrics; $p = .0001$). Directors of family practice courses were more likely to describe the "quality" of their courses as "exceptional" than were those of internal medicine or pediatrics (54 percent versus 16 percent and 25 percent, respectively; $p < .01$). Similarly, as reported by the course direc-

tors, students enrolled in family practice courses were most apt to rate course quality as "exceptional" (69 percent versus 46 for pediatrics and 16 percent for internal medicine; $p = .0005$).

Discussion

Patient care was the primary activity of 81 percent of U.S. physicians in 1983 (12). To improve student education in primary care, Eichna (13) has advocated required ambulatory medicine courses in the fourth year of medical school. He stated that medical education "has an obligation to society to produce not only good doctors but also the proper distribution of doctors among types of practice." Although surveys show a wide disparity between diagnoses made in tertiary care systems and those made in private offices (4, 7, 8, 14), many students are taught primary care only in university settings. Fletcher and colleagues (15) stated, "Doctors in training should not be misled into believing that the medical aspects of clinic experiences are similar to primary care in office practice."

The study reported here demonstrates that most family practice, internal medicine, and pediatrics departments offer ambulatory care courses and that 56 percent offer experience in private practice settings. Family practice faculties have long held that formal courses in primary care produce better educated students and also attract students to that field (3, 8). Their assertion is reflected in the present study in the high percentage of family practice departments offering ambulatory care courses and the frequent inclusion of private practitioners in teaching these courses. In contrast, internal medicine departments offered ambulatory care courses less often than other departments and were less likely to involve private physicians. Their courses were less often required for graduation and had relatively small numbers of students. Further, relatively few full-time preceptorships were offered by internal medicine. Directors of internal medicine courses were the least likely to rate their courses as "exceptional" and to estimate that students would view their courses as "exceptional."

Private physicians are a major potential resource for instruction in ambulatory care. Although there may be limitations to their contribution, as student involvement and responsibility for patient care may be less intensive in private offices than in university settings, the inclusion of private physicians can enhance the teaching of attitudes and can broaden the educational experience of the student (1–8, 13–15). Unfortunately, internal medicine departments have underused this resource in comparison with departments of family practice and pediatrics.

References

1. LIVINGSTON, M. C. P., et al. Six Medical Students in a Community Hospital. *Can. Med. Assoc. J.*, **109**:1013–1016, 1973.
2. VERBY, J. E., SCHAEFER, M. T., and VOEKS, R. S. Learning Forestry Out of the Lumberyard. A Training Alternative for Primary Care. *J.A.M.A.*, **246**:645–647, 1981.
3. BAKER, R. M., MCWHINNEY, I., and BROWN, T. C. Undergraduate Education in Family Medicine. *J. Fam. Pract.*, **5**:37–46, 1977.
4. PARKERSON, JR., G. R., and BAKER, C. Clinical Experience of Medical Students in North Carolina Family Medicine Preceptorships. *J. Med. Educ.*, **55**:42–47, 1980.
5. BEASLEY, J. W. Using Private Practice Settings for Academically Intensive Family Practice Clerkships. *J. Fam. Pract.*, **17**:877–882, 1983.
6. TAYLOR, R. B., CAMP, L., ROGERS, J. M., UPDIKE, J., and LYLE, C. A Third-Year Family Medicine Clerkship Based in an Academic Family Practice Center. *J. Med. Educ.*, **59**:39–44, 1984.

7. PARKERSON, JR., G. R., MUHLBAIER, L. H., and FALCONE, J. C. A Comparison of Students' Clinical Experience in Family Medicine and Traditional Clerkships. *J. Med. Educ.*, **59**:124–130, 1984.
8. BARR, D. M. Primary and Specialized Care: Implications for Learning Situations. *J. Med. Educ.*, **53**:176–185, 1978.
9. WILSON, V. (Ed.). *AAMC Directory of American Medical Education/1983–84*. Washington, D.C.: Association of American Medical Colleges, 1983.
10. 84th Annual Report on Medical Education in the United States/1983–1984. *J.A.M.A.*, **252**:1595–1597, 1984.
11. NIE, N. H., HULL, C. H., JENKINS, J. G., STEINBRENNER, K., and BENT, D. H. *SPSS: Statistical Package for the Social Sciences/Second Edition*. New York: McGraw-Hill, 1975.
12. Supply of MDs rises by 3.8 percent. *Am. Med. News*, **27**:17, 1984.
13. EICHNA, L. W. A Medical-School Curriculum for the 1980s. *N. Engl. J. Med.* **308**:18–21, 1983.
14. MCCUE, J. D. Training Internists: Insights from Private Practice. *Am. J. Med.*, **71**:475–479, 1981.
15. FLETCHER, S. W., FLETCHER, R. H., PAPPIUS, E. M., and RUDD, R. A Teaching Hospital Medical Clinic: Secondary Rather than Primary Care. *J. Med. Educ.*, **54**:384–391, 1979.

A3273-8

Vol. 61 No. 7 July 1986

JOURNAL OF

Medical Education

PUBLICATION OF THE ASSOCIATION OF AMERICAN MEDICAL COLLEGES

Journal of Medical Education

Volume 61 • Number 7 • July 1986

Location of Medical Education and Choice of Location of Practice—W. Bradley Burfield, Douglas E. Hough, and William D. Marder 545

Relationship Between Expected Indebtedness and Career Choice of Medical Students—Robert H. Geertsma and John Romano 555

Legal Liability of Students and Residents in the Health Care Setting—Richard Oliver 560

Responses of Fourth-Year Medical Students to a Required Clerkship in Geriatrics—Robert A. Murden, Diane E. Meier, Patricia A. Bloom, and Rein Tideiksaar 569

Validity of Self-Reports of Behavior Changes by Participants After a CME Course—Lynn Curry and Ian E. Purkis 579

Evaluation of System Providing Feedback to Students on Videotaped Patient Encounters—Peter C. Scheidt, Stephen Lazoritz, William L. Ebbeling, Alan R. Figelman, Harold F. Moessner, and Jerome E. Singer 585

Predictors of Success in an Anesthesiology Residency—Shirley S. Warrick and Robert S. Crumrine 591

Communications: Residents' Dissatisfaction with Training Programs—John A. Rizzo 596

Estimating the Percentage of Primary Care Rural Physicians Produced by Regular and Special Admissions Policies—Howard K. Rabinowitz 598

Comparison of Students' Encounters with Patients in University and Community Hospitals—Robert L. Rosen, Bruce Eshler, and Roger C. Bone 601

Teaching Communication Skills to First-Year Medical Students—Mark Quirk and Andrew Letendre 603

A Division of Substance Abuse Medicine in a Teaching Hospital—William D. Lerner, Ronald O. Forbes, Stephen I. Merlin, and Marjorie A. Barr 606

Faculty Evaluation of Medical Textbooks and Optional Readings—P. J. McLeod 608

Comparison of Patient Populations Seen by Pediatric Residents and by Practicing Community Pediatricians—Janice R. Sargent and Mary L. Ashley 610

Briefs 612

Editorial: Career Decisions 615

Datagram: Results of the NRMP for 1986 617

Book Review 620

Bibliography 622

Letters to the Editor 626

Officers of the Association and Members of the Executive Council, 1985–86

CHAIRMAN: Virginia V. Weldon, *Washington University*
CHAIRMAN-ELECT: Edward J. Stemmler, *University of Pennsylvania*
IMMEDIATE PAST CHAIRMAN: Richard Janeway, *Wake Forest University*
PRESIDENT: John A. D. Cooper, *AAMC, Washington, D.C.*

COUNCIL OF DEANS
D. Kay Clawson, *University of Kansas**
Arnold L. Brown, *University of Wisconsin*
William T. Butler, *Baylor College of Medicine*
Robert S. Daniels, *University of Cincinnati*
William B. Deal, *University of Florida*
Louis J. Kettel, *University of Arizona*
Richard H. Moy, *Southern Illinois University*
John Naughton, *SUNY at Buffalo*
Richard S. Ross, *Johns Hopkins University*

COUNCIL OF ACADEMIC SOCIETIES
David H. Cohen, *SUNY at Stony Brook**
William F. Ganong, *UC, San Francisco*
Frank G. Moody, *University of Texas, Houston*
Virginia V. Weldon, *Washington University*

COUNCIL OF TEACHING HOSPITALS
C. Thomas Smith, *Yale-New Haven Hospital**
J. Robert Buchanan, *Massachusetts General Hospital*
Spencer Foreman, *Sinai Hospital of Baltimore*
Sheldon S. King, *Stanford University Hospital*

ORGANIZATION OF STUDENT REPRESENTATIVES
Richard Peters, UC, San Diego*
Vicki Darrow, *University of Washington*

DISTINGUISHED SERVICE MEMBER
Charles C. Sprague, *University of Texas Southwestern Medical School*

* Chairman of respective organization.

Location of Medical Education And Choice of Location of Practice

W. Bradley Burfield, Douglas E. Hough, Ph.D., and William D. Marder

Abstract—The geographical distribution of physicians is affected by a number of factors, including the location of their medical education. The authors of the present paper examined the physicians' decisions on where to locate after they completed their training by determining where a state's practicing physicians come from and whether physicians who are trained in a state practice in that state or out of state. The results indicated a positive correlation between location of training and location of practice. Women physicians and general/family practitioners were most likely to remain in the state where they received their graduate medical education. The results also suggested that medical schools and graduate medical education programs are vehicles through which a state can attract physicians who will practice there.

The geographic distribution of physicians is affected by a number of factors, one of which is the location of their medical education programs. In fact, one of the missions often set for a state's medical education system is to provide an adequate number of practicing physicians in the state. A medical school can be an effective vehicle for accomplishing this mission because of the school's influence on the choices of location made by its own graduates and because of the influx of physicians trained out of state who are attracted to the state by the medical school facilities. A state also can seek to increase the number of residency positions in institutions in the state in order to take advantage of the finding that residents are more likely than medical students to remain in the state where they received their training (1–5).

A state might consider other strategies to attract practicing physicians. For example, it could modify its schools' missions in order to attract the types of students who would tend to remain in the state, as did the "community-based" medical schools created in the 1960s and 1970s (6–10). Alternatively, a school could forgive or reduce the repayment of student loans if a student practiced in the state (or, especially, an underserved area of the state) after graduation. Kansas and Ohio are two states that established such programs. More dramatically, a state could opt not to have a public medical school, choosing instead to finance the state's students at out-of-state medical

Mr. Burfield is director of special projects, Division of Survey and Data Resources, and Mr. Marder is director, Department of Health Resource Analysis, Center for Health Policy Research, both at the American Medical Association; Dr. Hough is a partner in the Health Policy Research Group; all are in Chicago, Illinois.

schools. Finally, a state can employ a "beggar-thy-neighbor" policy, relying on other states to train physicians and then giving financial incentives to induce those physicians to relocate.

Before a state government can choose the most effective policy, it must have detailed information on the locational decisions of physicians after they complete their training. In this paper, the authors supply some of that information. They addressed two related but not identical questions: Where do a state's practicing physicians come from? Do the physicians who are trained in a state practice in state or out of state? The results provide two perspectives on the relation between location of training and location of practice in physicians' career decisions.

Methods

The information on physician location and other characteristics for the study came from the American Medical Association Physician Masterfile, compiled and maintained since 1906. The masterfile contains demographic and professional information on all active physicians and residents in the United States. Information on physicians is updated daily from a variety of sources. In addition, a full census is conducted every four years through a mail survey, the Physicians' Professional Activity Census. More complete information on the masterfile and its accuracy is available elsewhere (11, 12).

The authors of the present paper used data from the masterfile as of December 31, 1982, the most recent fully documented file. At that time, 449,389 physicians were involved in patient care or in other professional activities, including medical teaching and research. This figure excluded physicians whose activities were unclassified (13,558), whose addresses were unknown (3,321), and who were inactive (35,690). Residents in training at the end of 1982 (68,986, including foreign medical graduates [FMGs]) were ineligible for the study as they had not determined a practice location. The other FMGs (82,739) were excluded and studied separately because this study focused primarily on graduates of U.S. medical schools. Finally, the study group did not include the 3,014 physicians for whom the masterfile either reported no residency information or contained records of more than six residencies, since the determination of a state in which physicians received a plurality of their graduate medical education becomes less meaningful for physicians with seven or more residencies. The final total number of physicians in the study was 294,650.

The authors conducted the separate analysis of foreign medical graduates (FMGs) in order to compare their choices of practice location with those of U.S. medical school graduates. As of December 31, 1982, a total of 87,524 FMGs were involved in patient care and 8,103 in other professional activities. Of this total, 12,888 residents who were FMGs were excluded from the study. Of the resulting 82,739, the masterfile contained complete records on 76,883, the number used in the study reported here.

In this study, the authors considered the state where a student obtained his medical degree to be the state of his medical school regardless of the number of schools the student attended. The state of medical residency was considered to be the state where a physician received a plurality (that is, the largest proportion) of graduate medical education. This method avoided counting physicians as having trained in-state when they ob-

tained only brief postdoctural fellowships or residencies in the state after having practiced for some years. Finally, the state of practice was considered to be the state where a physician was practicing at the end of 1982.

Results

Table 1 shows the number and percentage of active, U.S.-trained physicians in 1982 who were practicing in the state where they received their training. Of the 294,650 practicing physicians who had graduated from a U.S. medical school, 115,737 (39.3 percent) were practicing in the same state as their medical school, 150,509 (51.1 percent) were practicing in the state where they had received their graduate training, and 87,430 (29.7 percent) were practicing in the same state where they had obtained both their undergraduate and graduate medical education. In Table 1 the row percentages do not add to 100 percent because the categories were neither mutually exclusive nor exhaustive. For example, a physician with no medical education history in the state where he practiced was not included in any of the categories. Further, a physician practicing in the state where he completed both his medical school and residency training appeared in all categories.

These overall numbers mask variations in terms of the physicians' characteristics, as shown in Table 1. Although the percentages of male and female physicians who graduated from a medical school in their state of practice were almost identical, considerable differences appear with regard to state of graduate medical education. On average, 60 percent of a state's female physicians completed a plurality of their residency training there, compared with only half of the state's male physicians. Approximately one-third of the female physicians received both undergraduate and graduate training in their state of practice.

Some variations occurred by age as well. Older physicians (and, to some extent, the youngest physicians) were more likely than other age groups to have been trained in the state where they practiced. Physicians who had graduated from medical school only 11 to 20 years earlier were most likely to have received their medical education outside their state of practice.

Segmenting the physician population by practice specialty revealed other patterns. General or family practitioners were by far the most likely to practice in the state where they earned their medical degree; they were also the second most likely, after psychiatrists, to have completed their residency in the state of practice. "Other" specialists (primarily pathologists) showed the lowest propensity for practicing in the state where they obtained their medical education. Finally, psychiatrists were among the least likely to practice in the state where they attended medical school while the most likely to practice where they received most of their residency training.

The characteristics of a physician's medical school seemed to influence subsequent choice of practice location, as shown in Table 1. Forty-eight percent of the practicing physicians who attended a U.S. public medical school did so in the state where they practiced. By contrast, only 31 percent of the physicians who attended a private medical school in the United States did so in the state where they practiced. This difference probably can be attributed more to the strong preferences that public medical schools give to applicants from their state than to ex-